What is claimed is:

1. A supported catalyst for producing a syndiotactic styrenic polymer, which comprises:

(A) a support with a high-surface area;

(B) a polymer coated onto the support; and

(C) a homogeneous transition metal compound as essential component;

wherein the polymer functions an insulation layer between the support and the metal compound.

2. The supported catalyst of claim 1 in which said polymer is harmless to catalylization performances, interactive with the catalyst and support, and insoluble in the styrenic monomer or polymerization solvent after the catalyst is loaded.

3. The supported catalyst of claim 1 in which said polymer contains polar groups.

4. The supported catalyst of claim 1 in which said polymer is selected from the group consisting of acrylonitrile-containing polymers and copolymers, hydroxyl group-containing polymer and copolymers, acrylic and acrylate polymers and copolymers, maleic anhydride-containing copolymers and maleic anhydride modified polymers, acetate containing polymers and copolymers, polyethers, polyketones, polyamide polymer and copolymers, and polyurethanes.

5. The supported catalyst of claim 4 in which said acrylonitrile-containing polymer or copolymer is selected from the group consisting of polyacrylonitrile, acrylonitrile-styrene block copolymer, styrene-acrylonitrile random coploymer, acrylonitrile-butadiene-styrene resin, acrylonitrile-butadiene random copolymer, and acrylonitrile-isoprene random coplymer.

6. The supported catalyst of claim 5 in which said styrene-acrylonitrile random

copolymer has a degree of polymerization of at least 5 and contains about 0.1 to 100 % by weight of acrylonitrile.

7. The supported catalyst of claim 1 in which said polymer is about 0.0001 to 99.999 % by weight.

8. The supported catalyst of claim 1 in which said support is an organic material selected from the group consisting of poly(styrene-co-divinylbenzene) bead, starch powder and polyolefin powder.

9. The supported catalyst of claim 1 in which said support is an inorganic material selected from the group consisting of silica gel, alumina, silica-alumina gel, zeolite, mica powder, clays, molecular sieves, metal oxide compounds, metal halogenides, metal carbonates and metal powder.

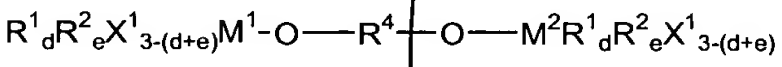
10. The supported catalyst of claim 1 in which said homogeneous transition metal compound is a metal compound of Group IVB represented by the following formula (A) or (B):

$$MR^1_aR^2_bR^3_cX_{4-(a+b+c)} \qquad (A)$$

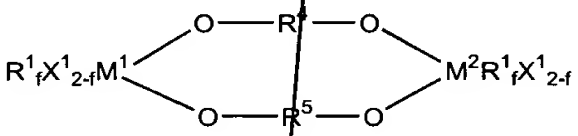
$$MR^1_dR^2_eX_{3-(d+e)} \qquad (B)$$

where M is an atom of Group IVB, R^1, R^2 and R^3 are a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkoxy group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, an arylalkylgroup having 6 to 20 carbon atoms, an aryloxy group having 1 to 20 carbon atoms, a cyclopentadienyl group, a substituted cyclopentadienyl group or an indenyl group, X is a halogen atom, a, b and c are an integer of 0 to 4, and d and e are an integer of 0 to 3.

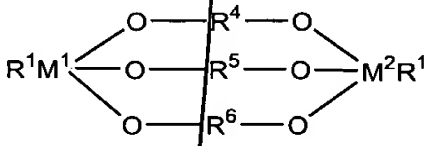
11. The supported catalyst of claim 1 in which said homogeneous transition metal compound is a binuclear catalyst represented by the following formula (C), (D) or (E):



(C)



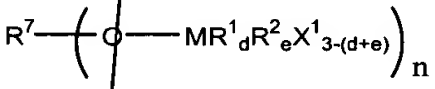
(D)



(E)

where M^1 and M^2 are an atom of Group IVB, R^1, R^2, R^4, R^5 and R^6 are an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms, a cyclopentadienyl group, a substituted cyclopentadienyl group or an indenyl group, X is a halogen atom, d and e are an integer of 0 to 3, and f is an integer of 0 to 2.

12. The supported catalyst of claim 1 in which said homogeneous transition metal compound is a multiple-nuclear catalyst represented by the formula (F):



(F)

where M is an atom of Group IVB, R^1 and R^2 are an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms, a cyclopentadienyl group, a substituted cyclopentadienyl group or an indenyl group, R^7 is an alkyl group having 1 to 20 carbon atoms, an aryl group having 6 to 20 carbon atoms, an alkylaryl group having 6 to 20 carbon atoms, an arylalkyl group having 6 to 20 carbon atoms, or a polymer having a polymerization degree of 5 to 10000, X is a halogen atom, d and e are an integer of 0 to 3, and n is an integer of 3 to 1000.

13. The supported catalyst of claim 1 in which said polymer is about 0.0001 to 30 % by weight.

14. The supported catalyst of claim 1 further comprising (D) alkyl aluminoxane and/or (E) alkyl aluminum compound.

15. A method of preparing a supported catalyst for producing a syndiotactic styrenic polymer, which comprises:

providing a support precursor by drying the slurry of a support with a high-surface area, a polymer to be coated onto the support, and a solvent; and

adding a homogeneous transition metal compound and a solvent to the support precursor.

16. The method of preparing a supported catalyst according to claim 15, which further comprises:

adding alkyl aluminoxane and/or alkyl aluminum compound to the slurry prior to the second step.

17. A method of producing a syndiotactic styrenic polymer, which comprises using a supported catalyst comprising a support with a high-surface area, a polymer

coated onto the support, and a homogeneous transition metal compound as essential component, the polymer functions an insulation layer between the support and the metal compound.

18. A method of producing a syndiotactic polymer, which comprises using a supported catalyst comprising a support with a high-surface area, a polymer coated onto the support, and a homogeneous transition metal compound as essential component, the polymer functions an insulation layer between the support and the metal compound.

19. The method of producing a syndiotactic polymer according to claim 18 wherein said syndiotactic polymer is styrenic polymer, olefin polymer or styrene-olefin copolymer.

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